



#4

SEQUENCE LISTING

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Shi, Jun

<120> PURIFIED EXPANSIN PROTEINS

<130> 1194/1C114US3

<140> 09/092,160

<141> 1998-06-05

<150> 08/440,517

<151> 1995-05-12

<150> 08/242,090

<151> 1994-05-12

<150> 08/060,944

<151> 1993-05-12

<160> 7

<170> PatentIn Ver. 2.1

<210> 1

<211> 681

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: cDNA cucumber
expansin

<400> 1

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accatgggtg gagcttgtgg gtatgggaat ttatacagcc aagggtatgg cacgaacacg
120
gtggcgctga gcactgctgt atttaacaat ggattaagtt gtggtgcttg cttcgaaatg
180
acttgtacaa acgaccctaa atggtgcctt ccgggaacta ttaggggtcac tgccaccaac
240
ttttgccttc ctaactttgc tctccctaac aacaatggtg gatggtgcaa ccctcctctc

OK

300
 caacacttcg acatgggtga gcctgccttc cttcaaatacg ctcaataaccg agctgggtatc
 360
 gtccccgtct cctttcgtag ggtaccatgt atgaagaaag gtggagttag gtttacaatc
 420
 aatggccact catacttcaa cctcggttttg atcacaaacg tcggtggcgc aggcgacgtc
 480
 cactctgtgt cgataaaggg gtctcgaact ggatggcaat ccatgtctag aaattggggc
 540
 caaaactggc aaagcaacaa ctatctcaat ggccaaggcc tttcctttca agtcactctt
 600
 agtgatggtc gcactctcac tgcctataat ctcgttcctt ccaattggca atttggccaa
 660
 acctatgaag gccctcaatt c
 681

<210> 2
 <211> 228
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: rice expansin

<220>
 <221> UNSURE
 <222> 211
 <223> Xaa is unknown or other.

<400> 2
 Ala Gly Gly Gly Trp Val Asn Ala His Ala Thr Phe Tyr Gly Gly Gly
 1 5 10 15
 Asp Ala Ser Gly Thr Met Gly Gly Ala Cys Gly Tyr Gly Asn Leu Tyr
 20 25 30
 Ser Gln Gly Tyr Gly Thr Asn Thr Ala Ala Leu Ser Thr Ala Leu Phe
 35 40 45
 Asn Asn Gly Leu Ser Cys Gly Ala Cys Phe Glu Ile Arg Cys Gln Asn
 50 55 60
 Asp Gly Lys Trp Cys Leu Pro Gly Ser Ile Val Val Thr Ala Thr Asn
 65 70 75 80
 Phe Cys Pro Pro Asn Asn Ala Leu Pro Asn Asn Ala Gly Gly Trp Cys
 85 90 95

Asn Pro Pro Gln Gln His Phe Asp Leu Ser Gln Pro Val Phe Gln Arg
 100 105 110
 Ile Ala Gln Tyr Arg Ala Gly Ile Val Pro Val Ala Tyr Arg Arg Val
 115 120 125
 Pro Cys Val Arg Arg Gly Gly Ile Arg Phe Thr Ile Asn Gly His Ser
 130 135 140
 Tyr Phe Asn Leu Val Leu Ile Thr Asn Val Gly Gly Ala Gly Asp Val
 145 150 155 160
 His Ser Ala Met Val Lys Gly Ser Arg Thr Gly Trp Gln Ala Met Ser
 165 170 175
 Arg Asn Trp Gly Gln Asn Trp Gln Ser Asn Ser Tyr Leu Asn Gly Gln
 180 185 190
 Ser Leu Ser Phe Lys Val Thr Thr Ser Asp Gly Gln Thr Ile Val Ser
 195 200 205
 Asn Asn Xaa Ala Asn Ala Gly Trp Ser Phe Gly Gln Thr Phe Thr Gly
 210 215 220
 Ala His Val Arg
 225

<210> 3
 <211> 222
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: rice expansin

<220>
 <221> UNSURE
 <222> (14)..(58)
 <223> Xaa is unknown or other.

<400> 3
 His Met Gly Pro Trp Ile Asn Ala His Ala Thr Phe Tyr Xaa Xaa Gly
 1 5 10 15
 Asp Ala Xaa Xaa Thr Met Gly Gly Ala Cys Gly Tyr Gly Asn Leu Tyr
 20 25 30

<222> (2)..(227)

<223> Xaa is unknown or other.

<400> 4

Lys	Xaa	Ser	Val	Ala	Gln	Ser	Ala	Phe	Ala	Thr	Phe	Tyr	Gly	Gly	Lys
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Asp	Gly	Ser	Cys	Thr	Met	Gly	Gly	Ala	Cys	Gly	Tyr	Gly	Asn	Leu	Tyr
			20					25					30		

Asn	Ala	Gly	Tyr	Gly	Leu	Tyr	Asn	Ala	Ala	Leu	Ser	Ser	Ala	Leu	Phe
		35					40					45			

Asn	Asp	Gly	Ala	Met	Cys	Gly	Ala	Cys	Tyr	Thr	Ile	Thr	Cys	Asp	Thr
	50					55					60				

Ser	Gln	Thr	Lys	Trp	Cys	Lys	Pro	Gly	Gly	Asn	Ser	Ile	Thr	Ile	Thr
65					70					75					80

Ala	Thr	Asn	Leu	Cys	Xaa	Pro	Asn	Trp	Ala	Leu	Pro	Ser	Asn	Ser	Gly
				85					90					95	

Gly	Trp	Cys	Asn	Pro	Pro	Leu	Xaa	His	Phe	Asp	Met	Ser	Gln	Pro	Ala
			100					105					110		

Trp	Glu	Asn	Ile	Ala	Val	Tyr	Gln	Ala	Gly	Ile	Val	Pro	Val	Asn	Tyr
		115					120					125			

Lys	Arg	Val	Pro	Xaa	Gln	Arg	Ser	Gly	Gly	Ile	Arg	Phe	Ala	Ile	Ser
	130					135					140				

Gly	His	Asp	Tyr	Phe	Glu	Leu	Val	Thr	Val	Thr	Asn	Val	Gly	Gly	Ser
145					150					155					160

Gly	Val	Val	Ala	Gln	Met	Ser	Ile	Lys	Gly	Ser	Asn	Thr	Gly	Trp	Met
				165					170					175	

Ala	Met	Ser	Arg	Asn	Trp	Gly	Ala	Asn	Trp	Gln	Ser	Asn	Ala	Tyr	Leu
			180					185					190		

Ala	Gly	Gln	Ser	Leu	Ser	Phe	Ile	Val	Gln	Leu	Asp	Asp	Gly	Arg	Lys
		195					200					205			

Val	Thr	Ala	Trp	Asn	Xaa	Ala	Pro	Xaa	Asn	Trp	Leu	Xaa	Xaa	Xaa	Xaa
	210					215					220				

Xaa	Xaa	Xaa
225		

<210> 5
 <211> 225
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Arabidopsis
 expansin

<400> 5
 Asp Asn Gly Gly Trp Glu Arg Gly His Ala Thr Phe Tyr Gly Gly Ala
 1 5 10 15
 Asp Ala Ser Gly Thr Met Gly Gly Ala Cys Gly Tyr Gly Asn Leu His
 20 25 30
 Ser Gln Gly Tyr Gly Leu Gln Thr Ala Ala Leu Ser Thr Ala Leu Phe
 35 40 45
 Asn Ser Gly Gln Lys Cys Gly Ala Cys Phe Glu Leu Thr Cys Glu Asp
 50 55 60
 Asp Pro Glu Trp Cys Ile Pro Gly Ser Ile Ile Val Arg Tyr Asn Leu
 65 70 75 80
 Ala Asn Phe Ala Leu Ala Asn Asp Asn Gly Gly Trp Cys Asn Pro Pro
 85 90 95
 Leu Lys His Phe Asp Leu Ala Glu Pro Ala Phe Leu Gln Ile Ala Gln
 100 105 110
 Tyr Arg Ala Gly Ile Val Pro Val Ala Phe Arg Arg Val Pro Cys Glu
 115 120 125
 Lys Gly Gly Gly Ile Arg Phe Thr Ile Asn Gly Asn Pro Tyr Phe Asp
 130 135 140
 Leu Val Leu Ile Thr Asn Val Gly Gly Ala Gly Asp Ile Arg Ala Val
 145 150 155 160
 Ser Leu Lys Gly Ser Lys Thr Asp Gln Trp Gln Ser Met Ser Arg Asn
 165 170 175
 Trp Gly Gln Asn Trp Gln Ser Asn Thr Tyr Leu Arg Gly Gln Ser Leu
 180 185 190
 Ser Phe Gln Val Thr Asp Ser Asp Gly Arg Thr Val Val Ser Tyr Asp

	195		200		205										
Val	Val	Pro	His	Asp	Trp	Gln	Phe	Gly	Gln	Thr	Phe	Glu	Gly	Gly	Gln
	210					215					220				

Phe
225

<210> 6
 <211> 226
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Arabidopsis
 expansin

<400> 6

Asp	Tyr	Ser	Ser	Trp	Gln	Ser	Ala	His	Ala	Thr	Phe	Tyr	Gly	Gly	Gly
1				5					10					15	
Asp	Ala	Ser	Gly	Thr	Met	Gly	Gly	Thr	Cys	Gly	Tyr	Gly	Asn	Leu	Tyr
			20					25					30		
Ser	Thr	Gly	Tyr	Thr	Asn	Thr	Ala	Ala	Leu	Ser	Thr	Val	Leu	Phe	Asn
		35					40					45			
Asp	Gly	Ala	Ala	Cys	Arg	Ser	Cys	Tyr	Glu	Leu	Arg	Cys	Asp	Asn	Asp
	50					55					60				
Gly	Gln	Trp	Cys	Leu	Pro	Gly	Ser	Val	Thr	Val	Thr	Ala	Thr	Asn	Leu
65					70					75					80
Cys	Pro	Pro	Asn	Tyr	Ala	Leu	Pro	Asn	Asp	Asp	Gly	Gly	Trp	Cys	Asn
			85						90					95	
Pro	Pro	Arg	Pro	His	Phe	Asp	Met	Ala	Glu	Pro	Ala	Phe	Leu	Gln	Ile
			100					105					110		
Gly	Val	Tyr	Arg	Ala	Gly	Ile	Val	Pro	Val	Ser	Tyr	Arg	Arg	Val	Pro
		115					120					125			
Cys	Val	Lys	Lys	Gly	Gly	Ile	Arg	Phe	Thr	Ile	Asn	Gly	His	Ser	Tyr
	130					135					140				
Phe	Asn	Leu	Val	Leu	Val	Thr	Asn	Val	Ala	Gly	Pro	Gly	Asp	Val	Gln
145					150					155					160

Ser Val Ser Ile Lys Gly Ser Ser Thr Gly Trp Gln Pro Met Ser Arg
165 170 175

Asn Trp Gly Gln Asn Trp Gln Ser Asn Ser Tyr Leu Asp Gly Gln Ser
180 185 190

Leu Ser Phe Gln Val Ala Val Ser Asp Gly Arg Thr Val Thr Ser Asn
195 200 205

Asn Val Val Pro Ala Gly Trp Gln Phe Gly Gln Thr Phe Glu Gly Gly
210 215 220

Gln Phe
225

<210> 7
<211> 227
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: cucumber
expansin

<400> 7
Asp Tyr Gly Gly Trp Gln Ser Gly His Ala Thr Phe Tyr Gly Gly Gly
1 5 10 15

Asp Ala Ser Gly Thr Met Gly Gly Ala Cys Gly Tyr Gly Asn Leu Tyr
20 25 30

Ser Gln Gly Tyr Gly Thr Asn Thr Val Ala Leu Ser Thr Ala Leu Phe
35 40 45

Asn Asn Gly Leu Ser Cys Gly Ala Cys Phe Glu Met Thr Cys Thr Asn
50 55 60

Asp Pro Lys Trp Cys Leu Pro Gly Thr Ile Arg Val Thr Ala Thr Asn
65 70 75 80

Phe Cys Pro Pro Asn Phe Ala Leu Pro Asn Asp Asp Gly Gly Trp Cys
85 90 95

Asn Pro Pro Leu Gln His Phe Asp Met Ala Glu Pro Ala Phe Leu Gln
100 105 110

Ile Ala Gln Tyr Arg Ala Gly Ile Val Pro Val Ser Phe Arg Arg Val

115		120		125
Pro Cys Met Lys Lys Gly Gly Val Arg Phe Thr Ile Asn Gly His Ser				
130		135		140
Tyr Phe Asn Leu Val Leu Ile Thr Asn Val Gly Gly Ala Gly Asp Val				
145		150		155
				160
His Ser Val Ser Ile Lys Gly Ser Arg Thr Gly Trp Gln Ser Met Ser				
		165		170
				175
Arg Asn Trp Gly Gln Asn Trp Gln Ser Asn Asn Tyr Leu Asn Gly Gln				
		180		185
				190
Gly Leu Ser Phe Gln Val Thr Leu Ser Asp Gly Arg Thr Leu Thr Ala				
		195		200
				205
Tyr Asn Leu Val Pro Ser Asn Trp Gln Phe Gly Gln Thr Tyr Glu Gly				
		210		215
				220
Pro Gln Phe				
225				